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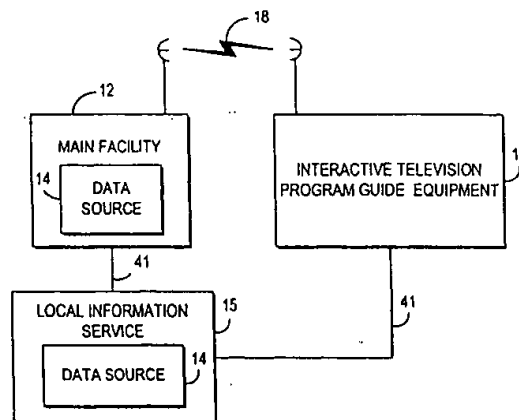
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(54) Title: CLIENT-SERVER ELECTRONIC PROGRAM GUIDE



(57) Abstract

A client-server interactive television program guide system is provided. An interactive television program guide client is implemented on user television equipment. The interactive television program guide provides users with an opportunity to define expressions that are processed by the program guide server. The program guide server may provide program guide data, schedules reminders, schedules program recordings, and parentally locks programs based on the expressions. Users' viewing histories may be tracked. The program guide server may analyze the viewing histories and generates viewing recommendations, targets advertising, and collects program ratings information based on the viewing histories.

CLIENT-SERVER ELECTRONIC PROGRAM GUIDEBackground of the Invention

This invention relates to interactive television program guide systems, and more particularly, to interactive television program guide systems based on client-server arrangements.

Cable, satellite, and broadcast television systems provide viewers with a large number of television channels. Users have traditionally consulted printed television program schedules to determine the programs being broadcast at a particular time. More recently, interactive television program guides have been developed that allow television program information to be displayed on a user's television. Interactive television program guides, which are typically implemented on set-top boxes, allow users to navigate through television program listings using a remote control. In a typical program guide, various groups of television program listings are displayed in predefined or user-selected categories. Program listings are typically displayed in a grid or

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different facilities and have their data provided to the main facility for localization and distribution or may provide their data to the television distribution facilities directly. The data provided to the

5 television distribution facilities includes television programming data (e.g., titles, channels, content information, rating information, program identifiers, series identifiers, or any other information associated with television programming), and other program guide

10 data for additional services other than television program listings (e.g., weather information, associated Internet web links, computer software, etc.). The main facility (and other sources) may provide the program

15 guide data to the television distribution facilities via a satellite link, a telephone network link, a cable or fiber optic link, a microwave link, an Internet link, a combination of such links, or any other suitable communications link.

Each television distribution facility has a

20 program guide server. If desired, program guide servers may also be located at cable system network nodes or other facilities separate from the television distribution facilities or other distribution facilities. Each program guide server stores the

25 program guide data provided by the main facility and provides access to the program guide data to program guide clients implemented on the user television equipment of a number of users associated with each television distribution facility. The program guide

30 servers may also store user data, such as user preference profiles, parental control settings, record and reminder settings, viewing history, and other suitable data.

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opportunity to access, modify, or delete the expressions.

The program guide server may also track the users' viewing histories to provide a user-customized program guide experience. Programs or series of episodes users have watched may be identified and used by the program guide, for example, to inform users when there are showings in the series that the users have not watched. The program guide may, for example, provide viewing recommendations based on a user's viewing history and, if appropriate, on user preference profiles or other criteria stored by the program guide server. The program guide may also target advertisements toward users based on the viewing histories or criteria, and may track the viewing of programs to generate viewership ratings.

Further features of the invention, its nature and various advantages will be more apparent from the accompanying drawings and the following detailed description of the preferred embodiments.

Brief Description of the Drawings

FIG. 1 is a schematic block diagram of an illustrative system in accordance with the present invention.

FIGS. 2a, 2b, and 2c show illustrative arrangements for the interactive program guide equipment of FIG. 1 in accordance with the principles of the present invention.

FIG. 3 is an illustrative schematic block diagram of a user television equipment of FIGS. 2a and 2b in accordance with the principles of the present invention.

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FIGS. 13a-13f show illustrative preference profile screens in accordance with the principles of the present invention.

FIG. 14 shows an illustrative profile activation screen in accordance with the principles of the present invention.

FIG. 15 shows a table containing an illustrative list of programs that might be available to a user after defining the preference profiles of FIGS. 13a-13f in accordance with the principles of the present invention.

FIGS. 16a-16c are illustrative program listings screens that may be displayed according to the preference profiles of FIGS. 13a-13f in accordance with the principles of the present invention.

FIGS. 17a and 17b show illustrative criteria screens in accordance with the principles of the present invention.

FIGS. 18 and 19 show illustrative program reminder lists generated according to the expressions of FIGS. 17a and 17b in accordance with the principles of the present invention.

FIGS. 20a and 20b show an illustrative viewer recommendation overlay, in accordance with the principles of the present invention.

FIG. 20c shows an illustrative additional information screen in accordance with the principles of the present invention.

FIG. 21 is a flowchart of illustrative steps involved in providing users with an opportunity to define preference profiles and access program guide data according to the preference profiles in accordance with the principles of the present invention.

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network link, a cable or fiber optic link, a microwave link, an Internet link, a combination of such links, or any other suitable communications link. Video signals may also be transmitted over link 18 if desired.

5 Local information service 15 may be any suitable facility for obtaining data particular to a localized region and providing the data to main facility 12 or interactive television program guide equipment 17 over communications links 41. Local
10 information service 15 may be, for example, a local weather station that measures weather data, a local newspaper that obtains local high school and college sporting information, or any other suitable provider of information. Local information service 15 may be a
15 local business with a computer for providing main facility 12 with, for example, local ski reports, fishing conditions, menus, etc., or any other suitable provider of information. Link 41 may be a satellite link, a telephone network link, a cable or fiber optic
20 link, a microwave link, an Internet link, a combination of such links, or any other suitable communications link. Additional data sources 14 may be located at other facilities for providing main facility 12 with non-localized data (e.g., non-localized program guide
25 data) over link 41.

The program guide data transmitted by main facility 12 to interactive television program guide equipment 17 may include television programming data (e.g., program identifiers, times, channels, titles, descriptions, series identifiers, etc.) and other data
30 for services other than television program listings (e.g., help text, pay-per-view information, weather information, sports information, music channel

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with opportunities to access program guide data without having to navigate the Internet, if desired. As shown in FIGS. 2a and 2b, interactive program guide television equipment 17 may include television
5 distribution facility 16 and user television equipment 22.

Television distribution facility 16 may have program guide distribution equipment 21 and program guide server 25. Distribution equipment 21 is
10 equipment suitable for providing program guide data from program guide server 25 to user television equipment 22 over communications path 20. Distribution equipment 21 may include, for example, suitable transmission hardware for distributing program guide
15 data on a television channel sideband, in the vertical blanking interval of a television channel, using an in-band digital signal, using an out-of-band digital signal, over a dedicated computer network or Internet link, or by any other data transmission technique
20 suitable for the type of communications path 20. Analog or digital video signals (e.g., television programs) may also be distributed by distribution equipment 21 to user television equipment 22 over communications paths 20 on multiple analog or digital
25 television channels. Alternatively, videos may be distributed to user television equipment 22 from some other suitable distribution facility, such as a cable system headend, a broadcast distribution facility, a satellite television distribution facility, or any
30 other suitable type of television distribution facility.

Communications paths 20 may be any communications paths suitable for distributing program

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Storage device 56 may be a memory or other storage device, such as random access memory (RAM), flash memory, a hard disk drive, etc., that is suitable for storing the program guide data transmitted to television distribution facility 16 by main facility 12. User data, such as user preference profiles, preferences, parental control settings, record and reminder settings, viewing histories, and other suitable data may also be stored on storage device 56 by program guide server 25. Program guide data and user data may be stored on storage device 56 in any suitable format (e.g., a Structured Query Language (SQL) database). If desired, storage 56 may also store video files for playing back on demand.

Processing circuitry 54 may process requests for program guide data by searching the program guide data stored on storage device 56 for the requested data, retrieving the data, and providing the retrieved data to distribution equipment 21 for distribution to user television equipment 22. Processing circuitry 54 may also process storage requests generated by the program guide client that direct program guide server 25 to store user data. Alternatively, program guide server 25 may distribute program guide data to and receive user data from user television equipment 22 directly. If communications paths 20 include an Internet link, DOCSIS link, or other high speed computer network link (e.g., 10BaseT, 100BaseT, 10BaseF, T1, T3, etc.), for example, processing circuitry 54 may include circuitry suitable for transmitting program guide and user data and receiving program guide data and storage requests over such a link.

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communications, or any other suitable type of inter-process or inter-object communication.

FIG. 2b shows an illustrative arrangement for interactive television program guide equipment 17 in which program guide server 25 obtains program guide data via the Internet. The program guide data obtained by program guide server 25 may be provided by main facility 12 or from some other source (e.g., local information service 15) and made available on the Internet. Internet service system 61 may use any suitable combination of hardware and software capable of providing program guide data from the Internet to program guide server 25 using an Internet based approach (e.g., using the HyperText Transfer Protocol (HTTP), File Transfer Protocol (FTP), etc.). FIG. 2b shows Internet service system 61 as being encompassed by television distribution facility 16. If desired, Internet service system 61 may be located at a facility that is separate from television distribution facility 16. Internet service system 61 may, for example, be located at main facility 12 or at some other Internet node suitable for providing program guide data from the Internet to program guide server 25. The functionality of Internet service system 61 and program guide server 25 may be integrated into one system if desired.

Another suitable arrangement for interactive television program guide equipment 17 is shown in FIG. 2c. Interactive television program guide equipment 17 may include, for example, television distribution facility 16 having program guide server 25 and Internet service system 61. A program guide client application may run on personal computer 23. The client may access

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or a analog demodulated video signal, but may also be a digital signal provided to television 36 on an appropriate digital bus (e.g., a bus using the Institute of Electrical and Electronics Engineers (IEEE) 1394 standard, (not shown)). The video signal at output 30 is received by optional secondary storage device 32.

The interactive television program guide client may run on set-top box 28, on television 36 (if television 36 has suitable processing circuitry and memory), on a suitable analog or digital receiver connected to television 36, or on digital storage device 31 if digital storage device 31 has suitable processing circuitry and memory. The interactive television program guide client may also run cooperatively on a suitable combination of these devices. Interactive television application systems in which a cooperative interactive television program guide application runs on multiple devices are described, for example, in Ellis U.S. patent application Serial No. 09/186,598, filed November 5, 1998, which is hereby incorporated by reference herein in its entirety.

Secondary storage device 32 can be any suitable type of analog or digital program storage device or player (e.g., a videocassette recorder, a digital versatile disc (DVD) player, etc.). Program recording and other features may be controlled by set-top box 28 using control path 34. If secondary storage device 32 is a videocassette recorder, for example, a typical control path 34 involves the use of an infrared transmitter coupled to the infrared receiver in the videocassette recorder that normally

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series of files may be received from distribution equipment 21 and stored.

Television 36 receives video signals from secondary storage device 32 via communications path 38. 5 The video signals on communications path 38 may either be generated by secondary storage device 32 when playing back a prerecorded storage medium (e.g., a videocassette or a recordable digital video disc), by digital storage device 31 when playing back a pre- 10 recorded digital medium, may be passed through from set-top box 28, may be provided directly to television 36 from set-top box 28 if secondary storage device 32 is not included in user television equipment 22, or may be received directly by television 36. During normal 15 television viewing, the video signals provided to television 36 correspond to the desired channel to which a user has tuned with set-top box 28. Video signals may also be provided to television 36 by set-top box 28 when set-top box 28 is used to play back 20 information stored on digital storage device 31.

Set-top box 28 may have communications device 37 for communicating with program guide server 25 over communications path 20. Communications device 37 may be a modem (e.g., any suitable analog or digital 25 standard, cellular, or cable modem), network interface card (e.g., an Ethernet card, Token ring card, etc.), a combination of such devices, or any other suitable communications device. Television 36 may also have such a suitable communications device if desired.

30 Set-top box 28 may have memory 44. Memory 44 may be any memory or other storage device, such as a random access memory (RAM), read only memory (ROM), flash memory, a hard disk drive, a combination of such

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drive, a combination of such devices, etc., that is suitable for storing program guide client instructions and program guide data for use by control circuitry 42.

User television equipment 22 of FIG. 4 may also have communications device 51 for supporting communications between the program guide client and program guide server 25 and via communications path 20. Communications device 51 may be a modem (e.g., any suitable analog or digital standard, cellular, or cable modem), network interface card (e.g., an Ethernet card, Token ring card, etc.), a combination of such devices, or any other suitable communications device.

A user controls the operation of user television equipment 22 with user interface 46. User interface 46 may be a pointing device, wireless remote control, keyboard, touch-pad, voice recognition system, or any other suitable user input device. To watch television, a user instructs control circuitry 42 to display a desired television channel on display device 45. To access the functions of the program guide, a user instructs the program guide implemented on interactive television program guide equipment 17 to generate a main menu or other desired program guide display screen for display on display device 45. If desired, the program guide client running on user television equipment 22 may provide users with access to program guide features without requiring them to navigate the Internet.

The program guide may provide users with an opportunity to access program guide features through a main menu. A main menu screen, such as illustrative main menu screen 100 of FIG. 5, may include menu 102 of selectable program guide features 106. If desired,

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approach, a user may speak a television program listing into a voice request recognition system. These methods of selecting program listings are merely illustrative. Any other suitable approach for selecting program

5 listings may be used if desired.

A user may view additional listings for the time slot indicated in timebar 111 by, for example, pressing an "up" or "down" arrow, or a "page up" or "page down" key on remote control 40. The user may
10 also see listings for the next 24 hour period, or the last 24 hour period, by pressing a "day forward" or "day backward" key on remote control 40, respectively. If there are no listings starting exactly 24 hours in the indicated direction, the program guide may pick
15 programs starting at either closer or further than 24 hours away. If desired, the program guide may require a user to scroll through advertisement banner 110. A user may view program listings for other time slots by, for example, pressing "right" and "left" arrows on
20 remote control 40.

FIG. 7 illustrates the display of program listings by channel. A user may scroll up and down to view program listings for additional time slots, and may scroll left and right to view program listings for
25 other channels. If desired, the day for which program listings are displayed may be included in display area 147 with the channel number as shown.

The program guide may provide users with an opportunity to view program listings sorted by
30 category. A user may, for example, press a special category key on remote control 40 (e.g., "movies", "sports", "children", etc.), select a selectable category feature from main menu screen 100 (FIG. 5), or

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display screens may include, for example, selectable advertisements, advertisement banners, brand logos, service provider logos, clocks, message indicators, or any other suitable screen element. The program guide
5 may provide users with access to selectable advertisements in response to, for example, a user pressing left arrows to move highlight region 151 to highlight a selectable advertisement. In the illustrative program listings screens of FIGS. 6, 8a,
10 8b, and 8c, the program guide may also adjust the time displayed in timebar 123 as the user scrolls or pages through program listings to reflect the time of the program listing at the top of the list.

The program guide client may provide a user
15 with an opportunity to define sophisticated boolean or natural language expressions of one or more criteria. Such criteria may include, for example, attribute type and attribute information that is provided by program guide server 25. The user defined expressions may be
20 stored by program guide server 25 for searching through and sorting program guide data, scheduling reminders, automatically recording programs, and parentally controlling programs. Criteria may also be derived by the program guide server or program guide client from
25 user profiles or by monitoring usage of the program guide or advertising. Program guide server 25 may also use expressions to obtain other types of information or programs. Program guide server 25 may obtain, for example, video-on-demand programs, web site links,
30 games, chat group links, merchandise information, or any other suitable information or programming from data sources 14 located at main facility 12 or other facilities. The program guide client may provide users

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opportunity to construct a natural language expression. The user may enter a natural language phrase, such as "List in alphabetical order all action programs starring Bruce Willis and that start today between 5 7:00P and 11:00P and that end between 9:00P and 1:30A" using user interface 46 (FIG. 4).

The program guide client may submit the user defined boolean expression or the natural language expression to program guide server 25 for processing. 10 Program guide server 25 may process the expression, and provide the resulting program guide data (e.g., program listings, program information, software, Internet links, etc.) or video programs to the program guide client for display. FIG. 11 shows an illustrative 15 program listings screen that may be displayed by the program guide client in response to the expressions defined in FIGS. 9a and 9b.

Users may also indicate a desire to have program guide server 25 automatically process 20 expressions by, for example, saving defined expressions as agents. A user may indicate a desire to save an expression as an agent by, for example, selecting Save As Agent selectable feature 147 of FIGS. 9a and 9b after defining a boolean or natural language 25 expression. The program guide client may automatically highlight Save As Agent selectable feature 147 when a user indicates that the user is finished defining an expression (e.g., by pressing an "OK" key). If desired the program guide client may provide the user with an 30 opportunity to name the agent.

Users may access saved expressions or agents by, for example, selecting selectable Agent feature 106 of main menu 102. In response, the program guide

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client automatically when the user accesses a feature of the program guide that would display such information. In still another suitable approach, program guide server 25 may provide, for example, 5 program identifiers and air times to the program guide client for use in generating program reminders that indicate found programs.

The program guide may also provide users with an opportunity to define user preferences that allow 10 users to customize their program guide experience. Systems in which interactive television program guides provide users with opportunities to define user preference profiles are described, for example, in Ellis et al. U.S. patent application Serial No. 15 09/034,934, filed March 4, 1998 (Attorney Docket No. UV-43), which is hereby incorporated by reference herein in its entirety. Users may indicate a desire to set up user preference profiles, for example, by selecting a selectable Setup feature 106 from main menu 20 102 of FIG. 5. When a user selects a selectable Setup feature 106 from main menu 102, the program guide client may display a setup screen, such as illustrative setup screen 411 of FIG. 12.

Setup screen 411 may provide a user with an 25 opportunity to set up various guide features, set parental control features, set features of set-top box 28 (FIG. 3), set audio features, set the screen position, set user preference profiles, or to set up any other feature or suitable combination of features. 30 The user may indicate a desire to set up a user preference profile by, for example, selecting User Profile feature 417. When the user indicates a desire to set up a user preference profile, the program guide

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guide client may query program guide server 25 for the user preference profiles associated with that program guide client.

FIGS. 13a-13f show six illustrative views of
5 preference profile setup screens in which the user has selected attribute types by, for example, selecting attribute selector 111 and arrowing right or left until a desired preference attribute type is displayed. For example, FIGS. 13a-13f illustrate how the program guide
10 may provide a user with an opportunity to set preference levels for series, genres, channels, actors and actresses, ratings, and other types of preference attributes, respectively. The user may select preference attributes by, for example, arrowing down
15 after selecting an attribute type. The user may then arrow right or left until a desired attribute is displayed. After the desired preference attribute is displayed, the user may, for example, arrow down to set a preference level for the attribute. The user may
20 then, for example, arrow right or left to select a suitable preference level.

Preference levels that may be used to indicate the user's interest or disinterest in a given preference attribute include strong like, weak like,
25 strong dislike, weak dislike, mandatory (appropriate, e.g., for closed-captioning for a deaf person), illegal (appropriate, e.g., for R-rated programs for a child) and don't care (neutral). After the user indicates that he or she is finished defining a profile (e.g., by
30 pressing an "OK" key or remote control 40), the program guide client may provide the preference profile data to program guide server 25 for use in providing program guide data. The user may arrow down again to select

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FIG. 15 is a table containing an illustrative list of programs that might be available to a user. The results that appear under the columns labeled "narrow scope", "moderate scope", and "wide scope", show which programs satisfy the preference attributes and preference levels of, for example, Profile #1 as illustratively defined in FIGS. 13a-13f. In practice, a listings screen generated based on a profile that is set to widest scope may typically include a larger number of program listings depending on the mandatory attributes set by the user.

When the user activates Profile #1 and sets it to the widest scope, program guide server 25 may provide program guide data for programs that have all mandatory attributes and no illegal attributes. For example, Seinfeld, The Shining, ER, Terminator, and My Stepmother is an Alien are included in the widest preference scope because they have the only mandatory attribute that is specified in Profile #1 -- closed-captioning (as set in FIG. 13f). In addition, they have no preference attributes with a preference level of illegal (R rating, TV-MA rating, or NC-17 rating (as set in FIG. 13e). The Night at the Opera is not included because it does not have a mandatory attribute (closed-captioning). Dante's Peak is not included because it has a illegal rating (R). An illustrative program listings screen that may be displayed by the program guide client with such limited data is shown in FIG. 16a (ER has not been listed because, presumably, it would be in a different time block).

When the user activates Profile #1 and sets it to the moderate scope, program guide server 25 may provide program guide data for programs that have no

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programs that are not more disliked and that have all mandatory attributes and no illegal attributes. The Shining is not included because it has a weakly disliked attribute, horror. Terminator is not included because it has a strongly disliked attribute, Arnold Schwarzenegger. My Stepmother is an Alien is included because the strongly liked attribute of comedy has priority over the weakly disliked attribute of horror. Dante's Peak is not included because it has a rating of R. Night at the Opera is not included because it is not closed-captioned. ER is not within the narrow scope because it does not have any liked attributes. It is at best, neutral. An illustrative program listings screen that may be displayed by the program guide client with such limited program guide data is shown in FIG. 16c.

The program guide may also provide users with an opportunity to schedule reminders using boolean or natural language expressions having one or more criteria. If desired, program guide server 25 may schedule reminders based on user preference profiles and agents. Reminders may be scheduled for individual programs or series of programs. Systems in which reminders are set for series of programs are described, for example, in Knudson et al. U.S. patent application Serial No. 09/330,792, filed June 11, 1999 (Attorney Docket No. UV-56), which is hereby incorporated by reference herein in its entirety.

A user may indicate a desire to schedule a reminder by, for example, selecting a selectable Reminders feature 106 from main menu 100 of FIG. 5. In response, the program guide may display a criteria screen. Illustrative criteria screens 161 and 169 are

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The program guide may remind a user that a program is airing at the time a program airs. In an alternative approach, the program guide may remind a user at some predetermined period of time before the program airs that a program is going to air. FIGS. 18 and 19 show illustrative program reminder lists 171. In FIG. 18, reminder list 171 is overlaid on top of the currently display television program to provide a user with the opportunity to view a reminder while still viewing a portion of the television program that a user is watching. In FIG. 19, reminder list 171 is shown overlaid on top of a program listings display screen. The program guide may provide a user with an opportunity to scroll through reminder list 171 by, for example, using remote control arrow keys. The program guide may hide the reminder list when, for example, a user selects hide reminder feature 172. The guide may also display reminder list 171 if, for example, the user presses an "OK" key at any time while watching TV.

The program guide may also provide users with an opportunity to schedule programs for recording by secondary storage device 47 or digital storage device 49 (FIG. 4) using boolean or natural language expressions. If desired, program guide server 25 may schedule programs for recording based on user preference profiles or agents. Programs may also be scheduled for recording by program guide server 25. Program guide systems in which programs are recorded by a remote server are described, for example, in Ellis et al. U.S. patent application Serial No. 09/332,244, filed June 11, 1999 (Attorney Docket No. UV-84), which is hereby incorporated by reference herein in its entirety.

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guide client may, for example, maintain a list of program identifiers and program air times and may instruct optional secondary storage device 47 or digital storage device 49 to record the programs.

5 The program guide may also provide users with an opportunity to parentally control titles, programs, or channels using boolean or natural language expressions. If desired, program guide server 25 may parentally control programs based on user preference
10 profiles. A user may indicate a desire to parentally control titles, programs, or channels by, for example, selecting a selectable Parents feature 106 from main menu 102 of FIG. 5. In response, the program guide may display a criteria screen, such as illustrative
15 criteria screens 161 and 169 of FIGS. 17a and 17b. The program guide client may display criteria screen 161 of FIG. 17a to provide a user with an opportunity to control programs, for example, according to a boolean type expression. The user may construct a boolean type
20 expression by selecting criteria such as attribute types, attributes, and logical operators. The user may make such selections, for example, using any suitable combination of right, left, up, or down arrow key sequences to sequence through the attribute types,
25 attributes and logical operators. In the example of FIG. 17a, the user has defined a boolean expression to lock out comedies that star Gary Shandling and that have a rating less than R. In the example of FIG. 17b, the user has defined a similar natural language
30 expression with similar criteria.

 The program guide client may submit the user defined boolean or natural language expression to program guide server 25 for processing. Program guide

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programs, and schedule reminders for programs, and may also provide this information to program guide server 25 as part of the viewing histories. Other types of information may also be included in the viewing

5 histories. User defined expressions, for example, may be stored by program guide server 25 to track what types of programs users search for. In addition, user demographic values may be calculated by program guide server 25 and used to more accurately target

10 advertisements or recommend programs. Systems in which user demographic values are calculated are described, for example, in Knudson et al. U.S. patent application Serial No. 09/139,777, filed August 25, 1998 (Attorney Docket NO. UV-58), which is hereby incorporated by

15 reference herein in its entirety.

The program guide client may provide the viewing history information to program guide server 25 continuously (e.g., each time the program guide client determines that a user has watched a program for the

20 predefined time), periodically, in response to polls or requests from program guide server 25, or with any other suitable frequency. If desired, the program guide client may also monitor advertisement usage, such as what selectable advertisements users have selected.

25 Program guide systems in which user viewing activities and advertisement usage are tracked are described, for example, in Thomas et al. U.S. patent application Serial No. 09/139,798, filed August 25, 1998 (Attorney Docket No. UV-57), which is hereby incorporated by

30 reference herein in its entirety.

The program guide may process user profiles along with the viewer histories to present a more customized viewing experience to the user. The program

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suitable program guide display screen. The program guide client may, for example, display targeted advertisements in criteria or profile screens based on a displayed criteria, profile, or agent. Selectable
5 advertisements 108 and advertisement banner 110, for example, may be targeted advertisements.

The program guide may make personalized viewing recommendations based on the viewing histories, preference profiles, or any suitable combination
10 thereof. Program guide server 25 may, for example, construct relational database expressions from the viewing histories that define expressions for the program categories and ratings for programs that users have watched, scheduled reminders for, searched for, or
15 ordered the most. Program guide server 25 may then apply user preference profile criteria to the programs, and generate personal viewing recommendations. In still another suitable approach, program guide server 25 or the program guide client may filter viewing
20 recommendations that are generated by main facility 12 or television distribution facility 16 based on similar expressions, profiles, viewing histories, etc.

Assume, for the purpose of illustration, that a user has run the expression illustrated in FIGS. 9a
25 and 9b, and has set the user profiles of FIGS. 13a-13f, program guide server 25 may determine that the movie Armageddon meets the criteria of the expression that was run, and also meets the criteria of the current user profile. Armageddon is a movie (strong like), an
30 action (strong like), and does not have an illegal rating (it is rated PG-13). Program guide server 25 may indicate the movie Armageddon (or its identifier) and its air time to the program guide client and

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profile. The preference profile may include user selected or defined levels of desirability of various program characteristics, such as genre and rating. Users may define preference profiles by, for example, selecting a profile (step 2002) and selecting criteria (step 2004) such as attribute types (step 2006) and attributes (step 2008). Preference profiles may, for example, be created as database files (e.g., SQL files) containing suitable database expressions that are provided to program guide server 25. Program guide server 25 may store the preference profiles at step 2012.

Program guide data is provided from program guide server 25 to the program guide client and is displayed by the program guide client at steps 2020 and 2030, respectively. Program guide server 25 or the program guide client may use preference profiles to filter out undesirable program guide data. This may be accomplished using any suitable approach. Program guide server 25 may, for example, only provide program listings information or other program guide data that meets the preference profile or profiles to the program guide client (step 2025). Alternatively, program guide server 25 may provide program guide data, other information, or videos to the program guide client and the program guide client may filter the data, other information, or videos by displaying only those elements that meet the preference profile or profiles (step 2035).

Program guide server 25 may perform additional functions based on preference profiles if desired. Program guide server 25 may, for example, lock programs according to preference profiles (step

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If the user indicated a desire to save an expression as an agent at step 2110, program guide server 25 may save the expression as an agent at step 2130. Otherwise, program guide server 25 may process
5 the expression (step 2140) using any suitable approach. This may depend on how the expression was provided by the program guide client. If boolean or natural language expressions were provided as text files, for example, program guide server 25 may parse the
10 expressions and construct a suitable database expression. Alternatively, database expressions may have been provided by the program guide client. In either approach, program guide server 25 may search its database or databases at other facilities for program
15 guide data (e.g., program listings, additional program information, etc.), other information (e.g., software, Internet links, etc.), or videos (e.g., video-on-demand videos) and may provide the results to the program guide client at step 2150. At step 2160 the program
20 guide client may display the results on user television equipment 22.

If the user indicated a desire to save the expression as an agent at step 2110. Program guide server 25 may save the expression as an agent using any
25 suitable approach. Agents may be maintained, for example, in a database that program guide server 25 monitors periodically. If desired, the agent may be forwarded to other servers at other facilities, thereby providing a user with the ability to monitor multiple
30 databases for program guide data, other information, or videos. Agents may be run automatically (e.g., databases may be queried) on one or more servers at step 2145. Step 2145 may be performed periodically,

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guide server 25 from the program guide client. If boolean or natural language expressions were provided as text files, for example, program guide server 25 may parse the expressions and construct a suitable database expression. Alternatively, database expressions may have been provided to program guide server 25 from the program guide client. In either approach, program guide server 25 may search its database or databases at other facilities and may provide the results to the program guide client or use the results to perform any suitable program guide function.

Reminders may be scheduled based on the results of the search (step 2230). Program guide server 25 may, for example, store reminder information (e.g., program identifiers and air times) at step 2235 and send messages to the program guide client at an appropriate time before a program starts. In another suitable approach, program guide server 25 may process an expression and provide program identifiers and air times to the program guide client. The program guide client may, for example, maintain a list of program identifiers and display program reminders at an appropriate time before the programs start.

Programs may also be automatically recorded by program guide server 25 or user television equipment 22 based on the results of the expression (step 2240). Program guide server 25 may, for example, provide program identifiers and air times to the program guide client. The program guide client may, for example, maintain a list of program identifiers and program air times and may instruct optional secondary storage device 47 or digital storage device 49 to record the programs at the appropriate time.

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program guide client determines that a user has watched a program for the predefined time), periodically, in response to polls or requests from program guide server 25, or with any other suitable frequency.

- 5 The viewing history tracked in steps 2310-2335 may be stored on program guide server 25 at step 2340. If desired, user-defined expressions that are processed by program guide server 25 may also be stored on program guide server 25 (step 2345). User
- 10 demographic values may be calculated by program guide server 25 at step 2347. The viewing history and its expressions and user demographic values may be used by program guide server 25 to perform any suitable function. Program guide server 25 may, for example,
- 15 collect program rating information (step 2350), or target advertising (step 2360).

- Program guide server 25 may search its or another server's database for programs that are consistent with the viewing history (step 2370). If
- 20 desired, program guide server 25 may find programs that are also consistent with preference profiles stored by program guide server 25 (step 2375). Program guide server may perform any suitable function using the results of the search. Program guide server 25 may,
- 25 for example, identify episodes of programs that are new to a user (step 2380), or provide viewing recommendations in the form of, for example, reminders or recommendations for non-program items (e.g., software, Internet links, etc.) (step 2390).

- 30 The foregoing is merely illustrative of the principles of this invention and various modifications can be made by those skilled in the art without departing from the scope and spirit of the invention.

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5. The system defined in claim 1 further comprising providing Internet links to the program guide client according to the user preferences.

6. A method for use in a client-server interactive television program guide system for scheduling reminders according to user defined expressions, comprising:

providing a user with an opportunity to define an expression with an interactive television program guide client implemented on user television equipment without requiring the user to navigate the Internet;

storing the expression on a program guide server;

processing the expression with the program guide server to find programs that satisfy the expression; and

scheduling with the program guide server reminders for programs that satisfy the expression.

7. The method defined in claim 6 wherein scheduling with the program guide server reminders for programs that satisfy the expression comprises providing at least one message from the program guide server to the program guide client before each of the programs that satisfy the expression begin.

8. The method defined in claim 6 wherein scheduling with the program guide server reminders for programs that satisfy the expression comprises ... providing program identifiers for each of the programs

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12. A method for use in a client-server interactive television program guide system for parentally controlling programs according to user defined expressions, comprising:

- providing a user with an opportunity to define an expression with an interactive television program guide client implemented on user television equipment without requiring the user to navigate the Internet;

- storing the expression on a program guide server;

- processing the expression with the program guide server to find programs that satisfy the expression; and

- locking with the program guide server programs that satisfy the expression.

13. The method defined in claim 12 wherein locking with the program guide server programs that satisfy the expression comprises indicating to the program guide client that the programs that satisfy the expression are locked.

14. A method for use in a client-server interactive television program guide system for tracking a user's viewing history, comprising:

- tracking a user's viewing history;

- storing the user's viewing history on a program guide server;

- finding programs with the program guide server that are consistent with the user's viewing history; and

- indicating on user television equipment the programs found by the program guide server that are consistent with the user's viewing history and that the

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targeting advertising with the program guide server based on the user's viewing history; and displaying the advertising with the interactive television program guide client on the user television equipment.

19. The method defined in claim 14 further comprising collecting program ratings information with the program guide server based on the user's viewing history.

20. A client-server interactive television program guide system comprising:

means for providing a user with an opportunity to define user preferences using an interactive television program guide client that is implemented on user television equipment, without requiring the user to navigate the Internet;

means for providing the user preferences to a program guide server; and

means for providing program guide data from the program guide server to the program guide client according to the user preferences.

21. The system defined in claim 20 further comprising:

means for generating a viewing recommendation based on the user preferences with the program guide server; and

means for displaying the user preferences with the interactive television program guide client on the user television equipment.

22. The system defined in claim 20 wherein the means for providing a user with an opportunity to

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before each of the programs that satisfy the expression begin.

27. The system defined in claim 25 wherein the means for scheduling with the program guide server reminders for programs that satisfy the expression comprises means for providing program identifiers for each of the programs that satisfy the expression from the program guide server to the program guide client.

28. A client-server interactive television program guide system for scheduling programs for recording according to user defined expressions, comprising:

means for providing a user with an opportunity to define an expression with an interactive television program guide client implemented on user television equipment, without requiring the user to navigate the Internet;

means for processing the expression with a program guide server to find programs that satisfy the expression; and

means for scheduling with the program guide server the programs that satisfy the expression for recording.

29. The system defined in claim 28 wherein the means for scheduling with the program guide server the programs that satisfy the expression for recording comprises means for scheduling with the program guide server the programs that satisfy the expression for recording by the user television equipment.

30. The system defined in claim 28 wherein the means for scheduling with the program guide server

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an interactive television program guide client implemented on the user television equipment.

34. The system defined in claim 33 wherein the means for tracking the user's viewing history comprises means for storing a user defined expression with the program guide server.

35. The system defined in claim 33 wherein the means for tracking the user's viewing history comprises means for calculating user demographic values with the program guide server.

36. The system defined in claim 33 further comprising:

means for providing a user with an opportunity to define a user preference profile with the interactive television program guide client implemented on user television equipment; and

means for finding programs with the program guide server that are consistent with the user preference profile, wherein:

the means for indicating on user television equipment the programs found by the program guide server that are consistent with the user's viewing history and that the user has not watched comprises means for indicating on user television equipment the programs found by the program guide server that are consistent with the user's viewing history and the user preference profile and that the user has not watched.

37. The system defined in claim 36 further comprising:

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41. The system defined in claim 39 wherein the interactive television program guide client is further programmed to provide a user with an opportunity to designate a preference level for a plurality of preference attributes.

42. The system defined in claim 39 wherein the program guide server is programmed to provide software to the interactive television program guide client according to the user preferences.

43. The system defined in claim 39 wherein the program guide server is programmed to provide Internet links to the interactive television program guide client according to the user preferences.

44. A client-server interactive television program guide system for scheduling reminders according to user defined expressions, comprising:

user television equipment on which an interactive television program guide client is implemented, wherein the program guide client is programmed to provide a user with an opportunity to define an expression without requiring the user to navigate the Internet;

a communications path over which the expression is provided by the interactive television program guide client to a program guide server, wherein the program guide server is programmed to find programs that satisfy the expression and schedule reminders for programs that satisfy the expression.

45. The system defined in claim 44 wherein scheduling with the program guide server reminders for programs that satisfy the expression comprises

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49. The system defined in claim 47 wherein the program guide server comprises a storage device on which the programs that satisfy the expression are stored.

50. A client-server interactive television program guide system for parentally controlling programs according to user defined expressions, comprising:

user television equipment on which an interactive television program guide client is implemented, wherein the interactive television program guide client is programmed to provide a user with an opportunity to define an expression without requiring the user to navigate the Internet;

a communications path over which the interactive television program guide client provides the expression to a program guide server, wherein the program guide server is programmed to find programs that satisfy the expression and lock programs that satisfy the expression.

51. The system defined in claim 50 wherein the program guide server is programmed to indicate to the interactive television program guide client the locked programs over the communications path; and

the interactive television program guide client is further programmed to indicate to the user the locked programs with the user television equipment.

52. A client-server interactive television program guide system for tracking a user's viewing history, comprising:

user television equipment on which an interactive television program guide client is

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interactive television program guide client over the communications path; and

the interactive television program guide client is further programmed to display the advertisements on the user television equipment.

56. The system defined in claim 54 wherein the program guide server is further programmed to collect program ratings information based on the viewing history information.

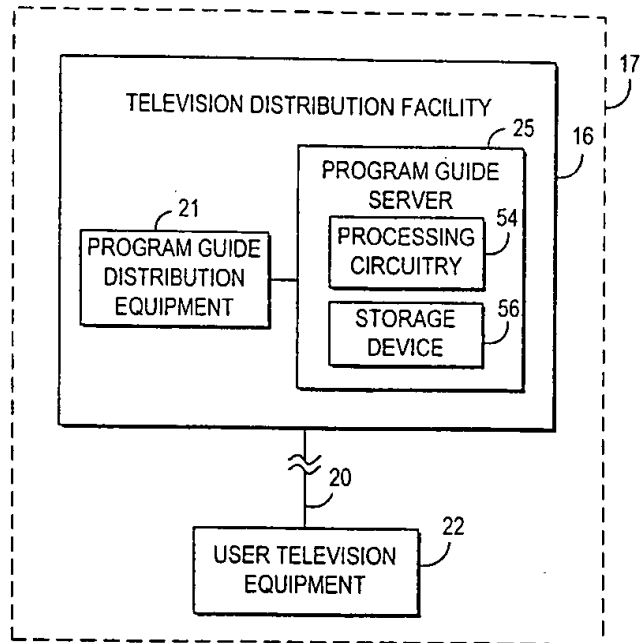


FIG. 2a

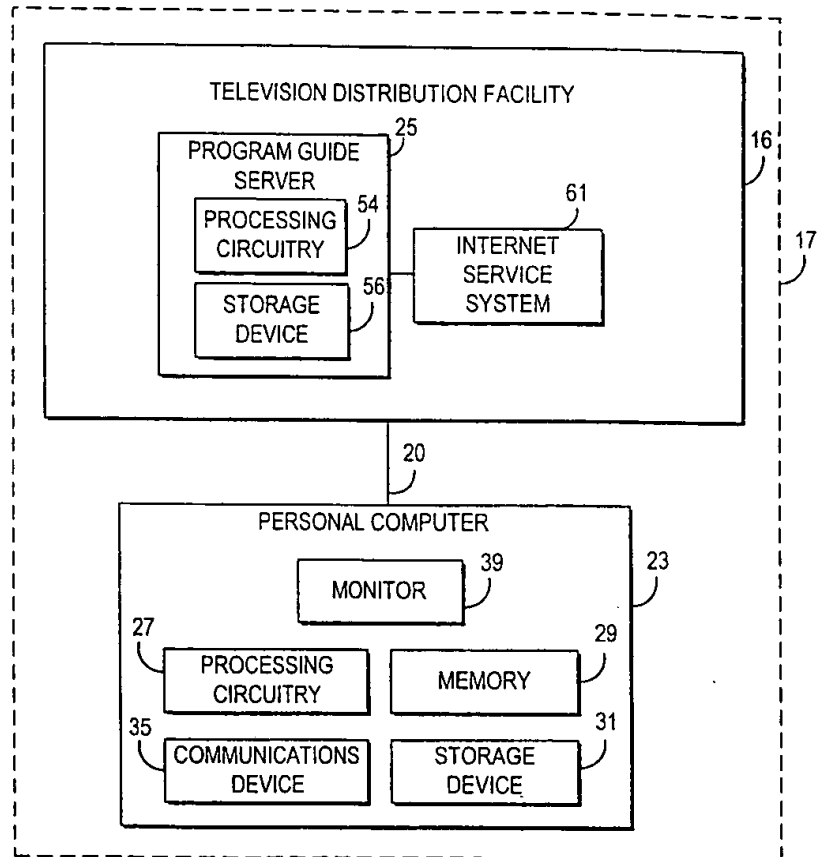


FIG. 2c

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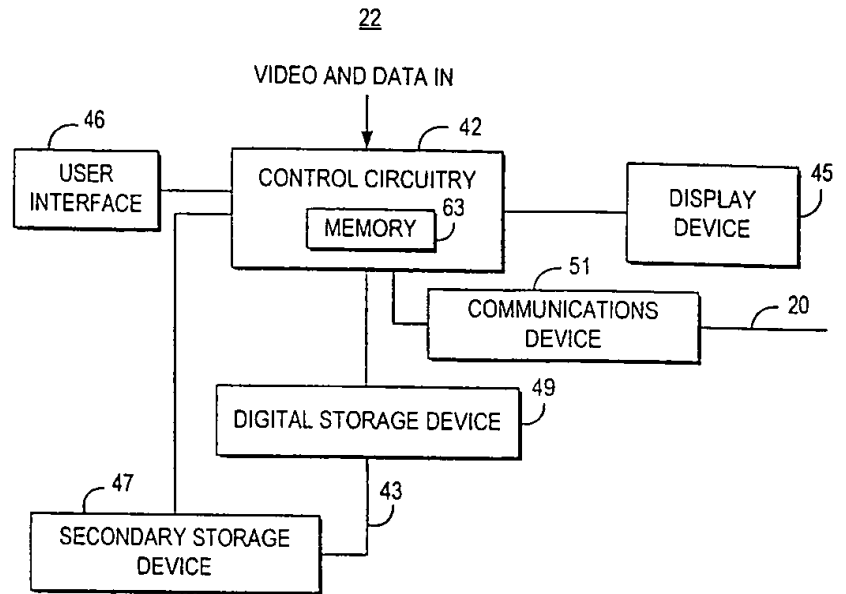


FIG. 4

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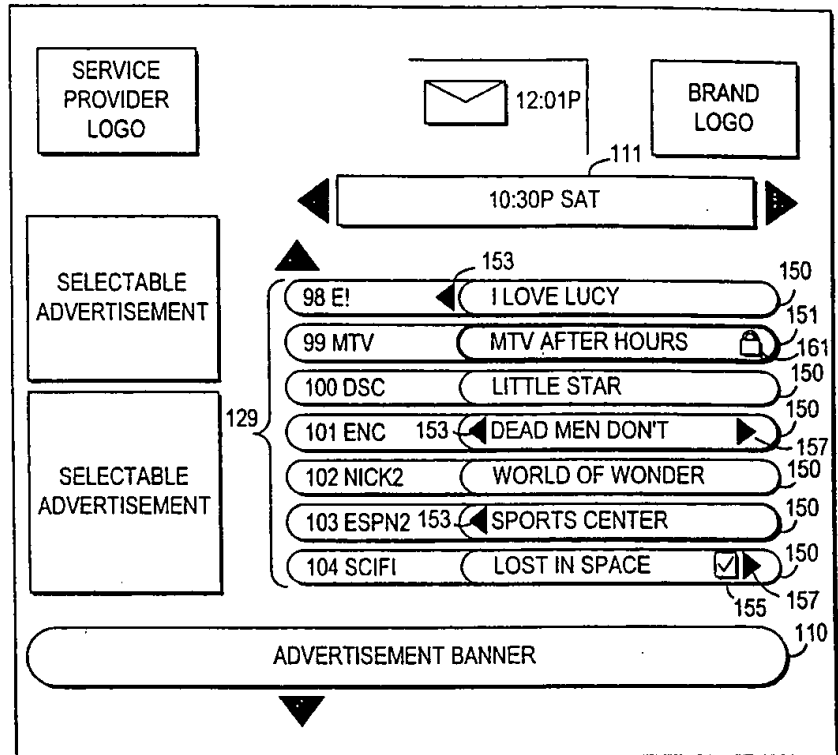
130

FIG. 6

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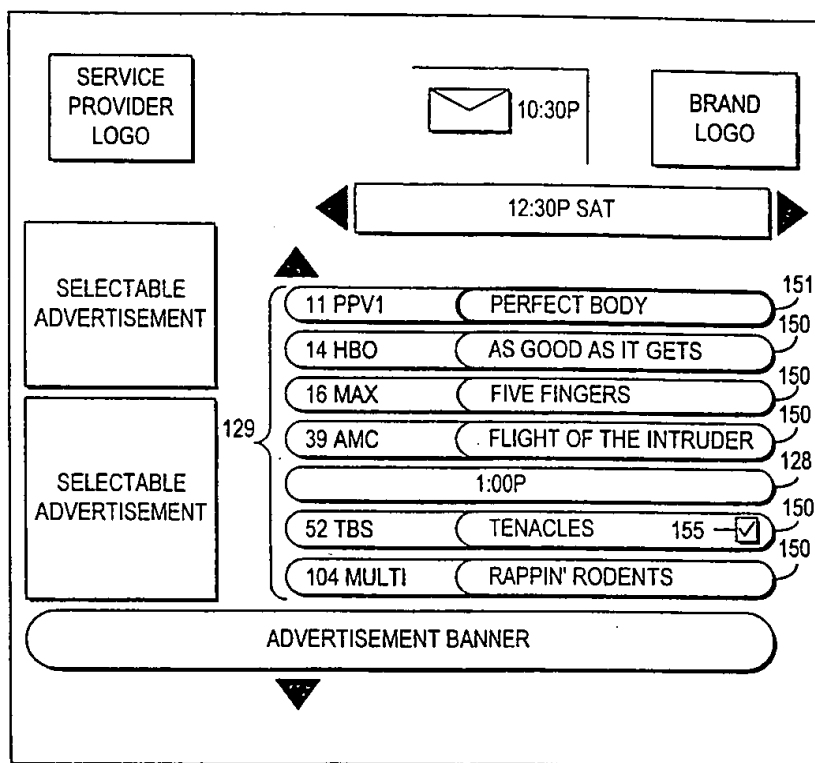


FIG. 8a

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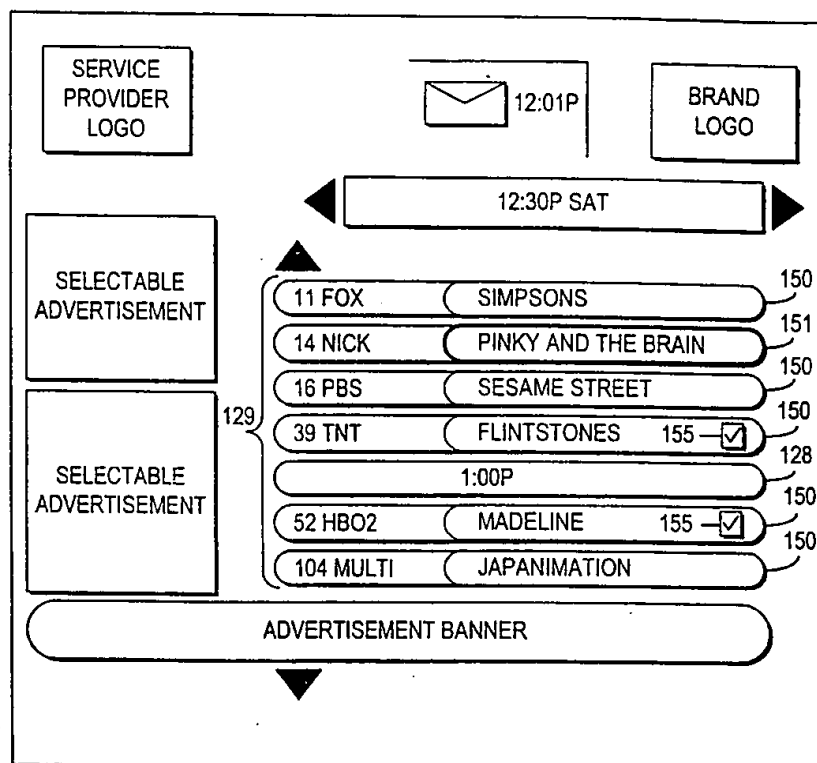


FIG. 8c

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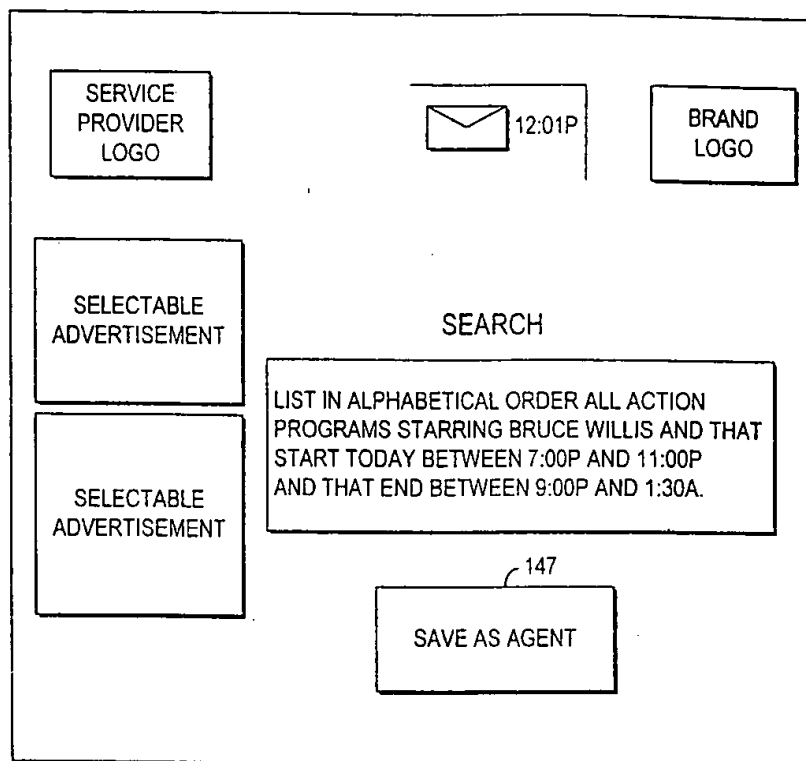
149

FIG. 9b

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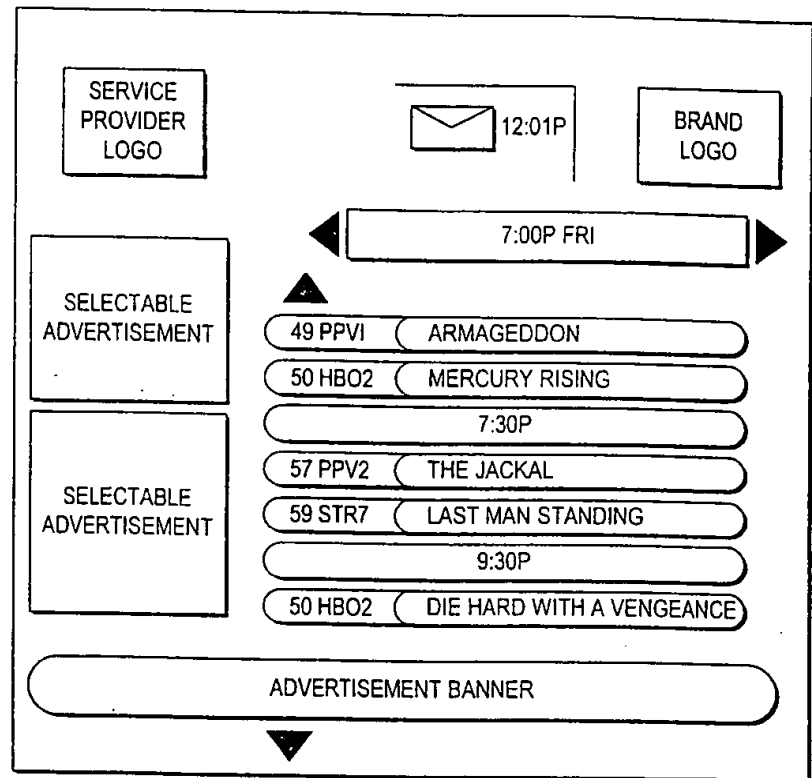


FIG. 11

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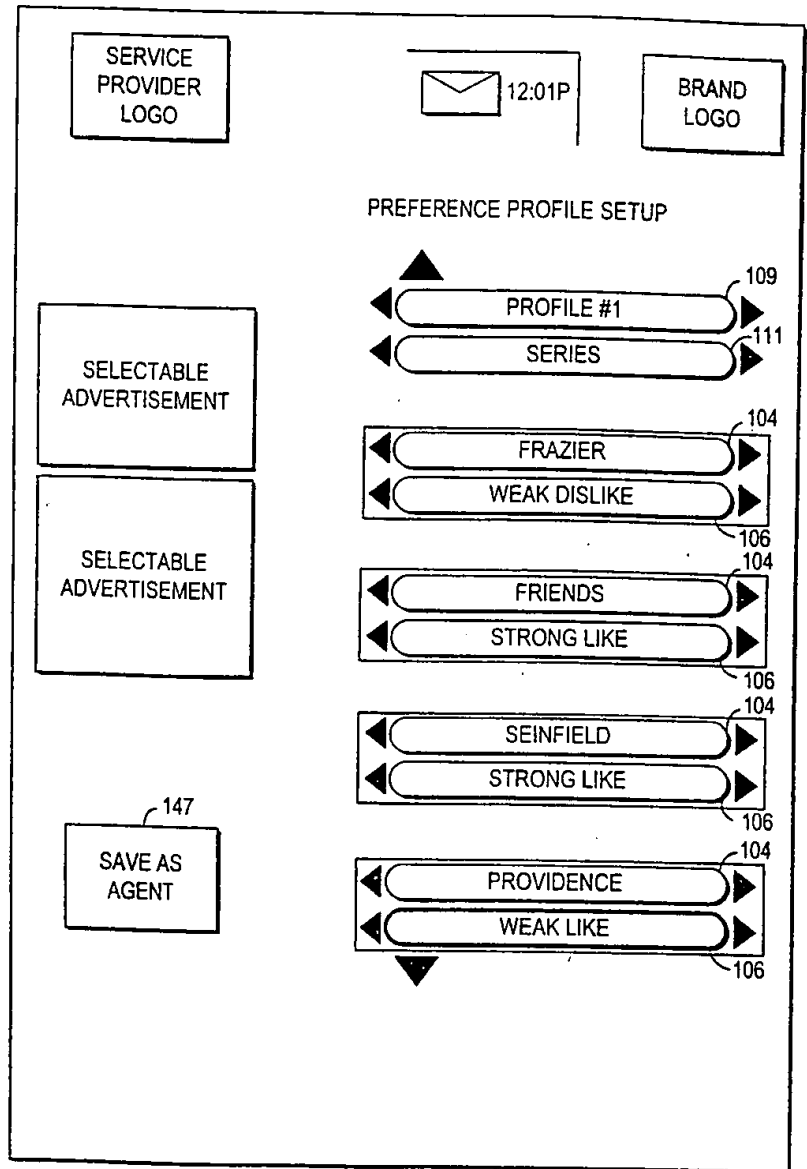


FIG. 13a

SUBSTITUTE SHEET (RULE 26)

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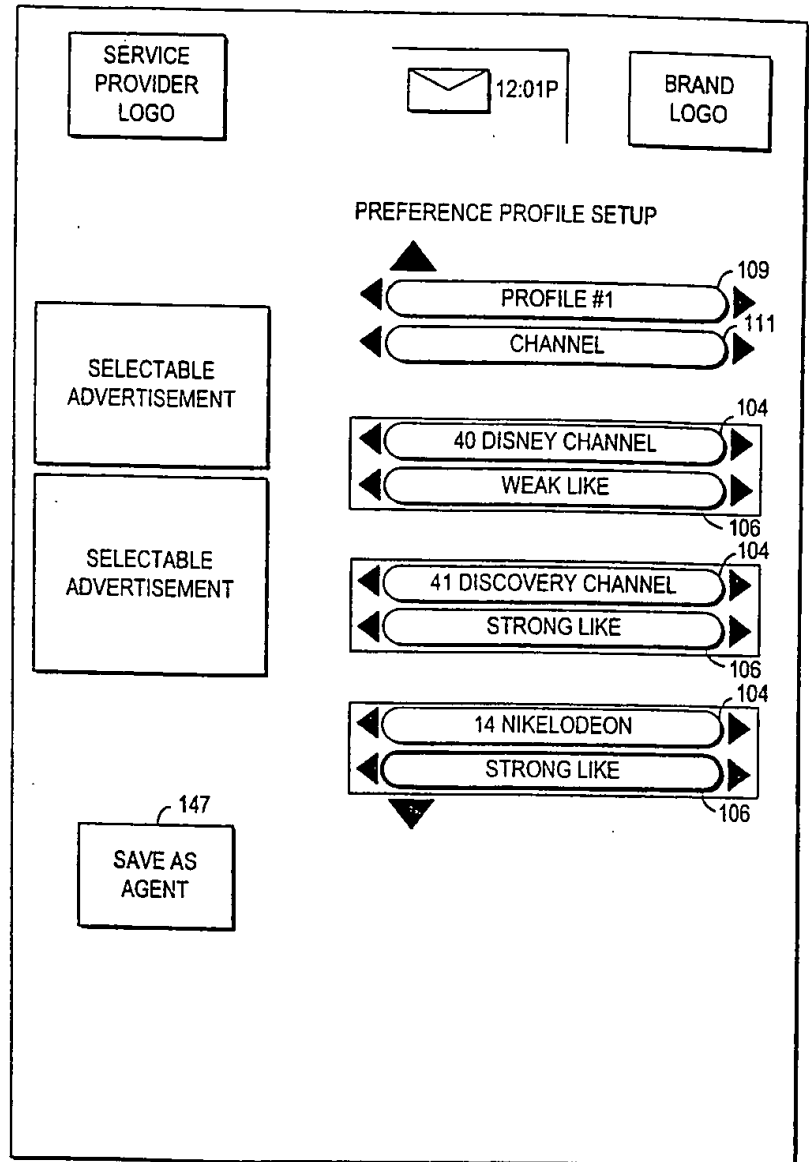


FIG. 13c

SUBSTITUTE SHEET (RULE 26)

22/39

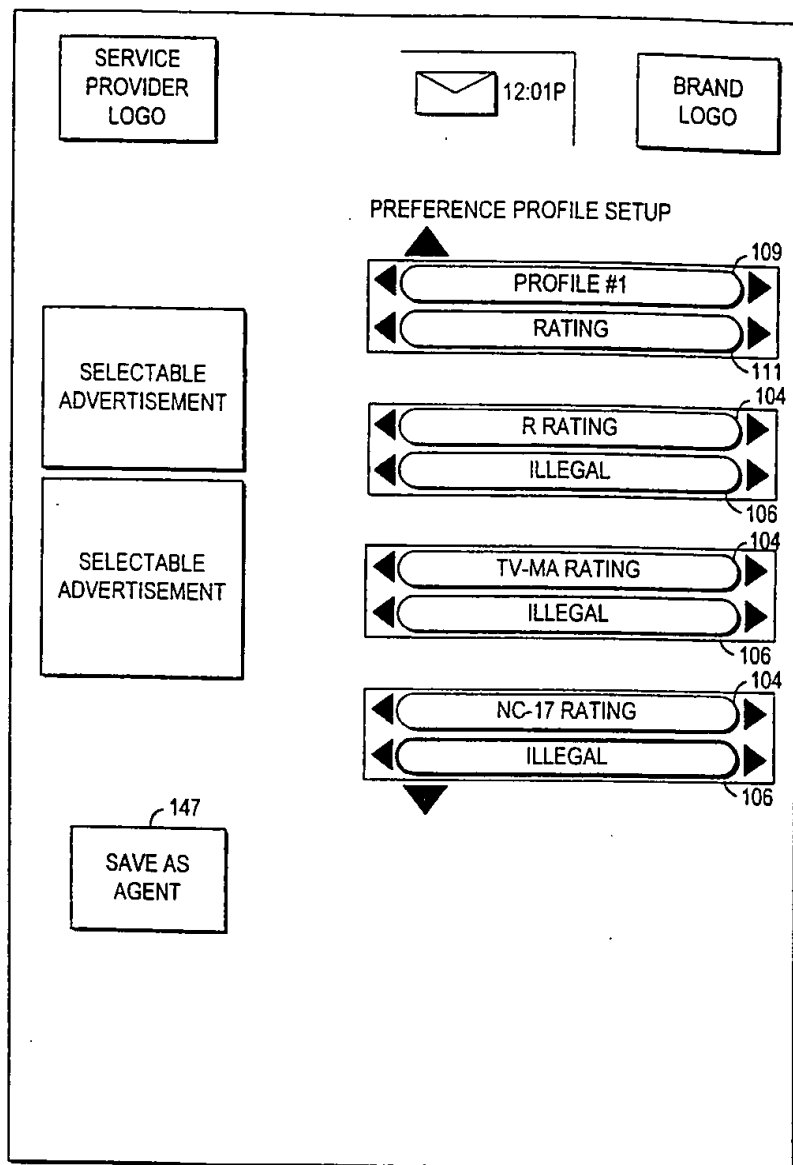


FIG. 13e

SUBSTITUTE SHEET (RULE 26)

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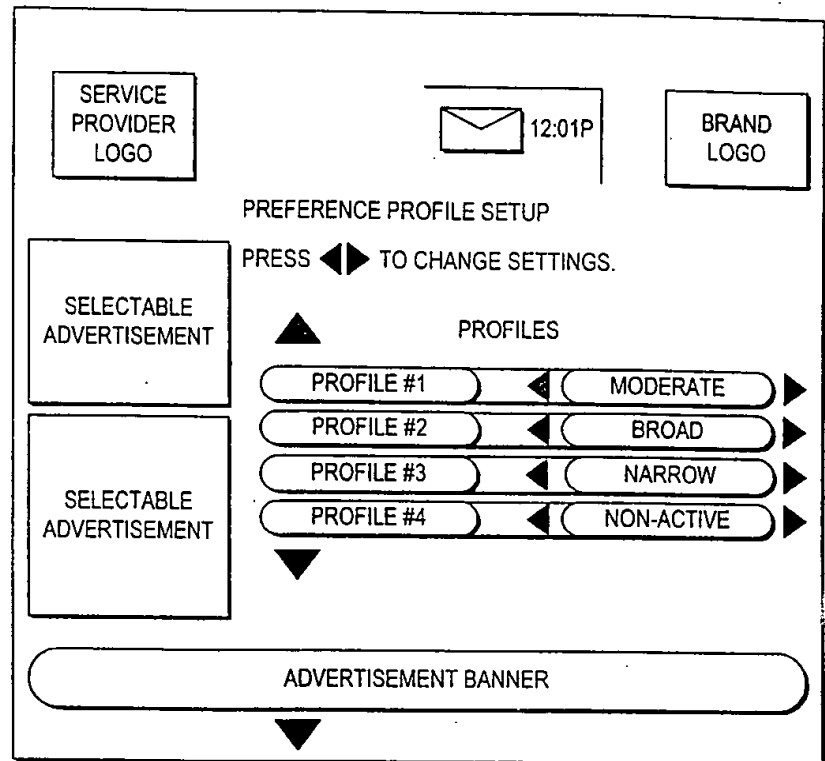
130

FIG. 14

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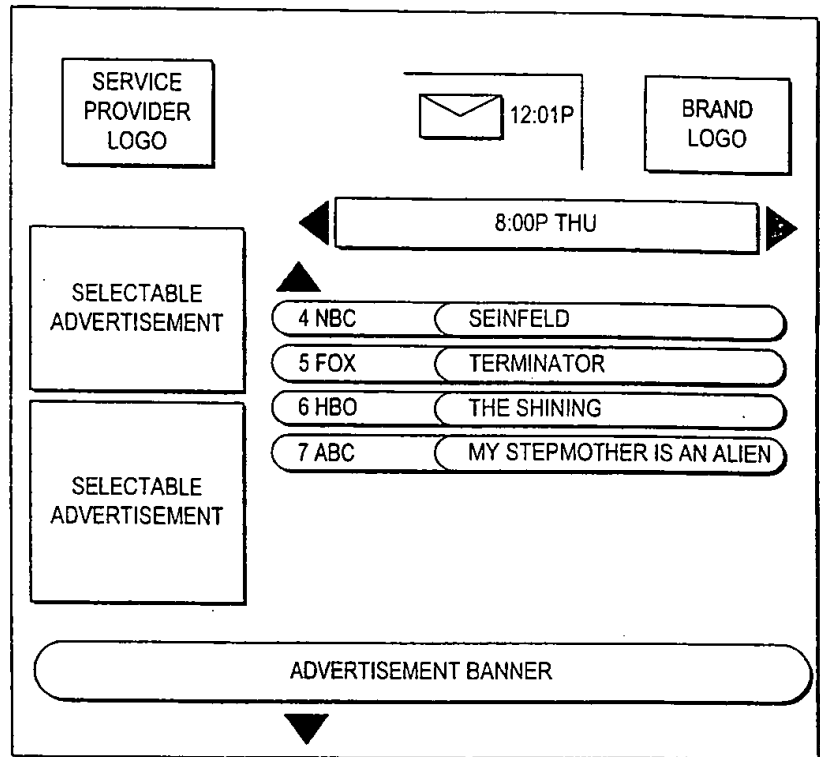


FIG. 16a

SUBSTITUTE SHEET (RULE 26)

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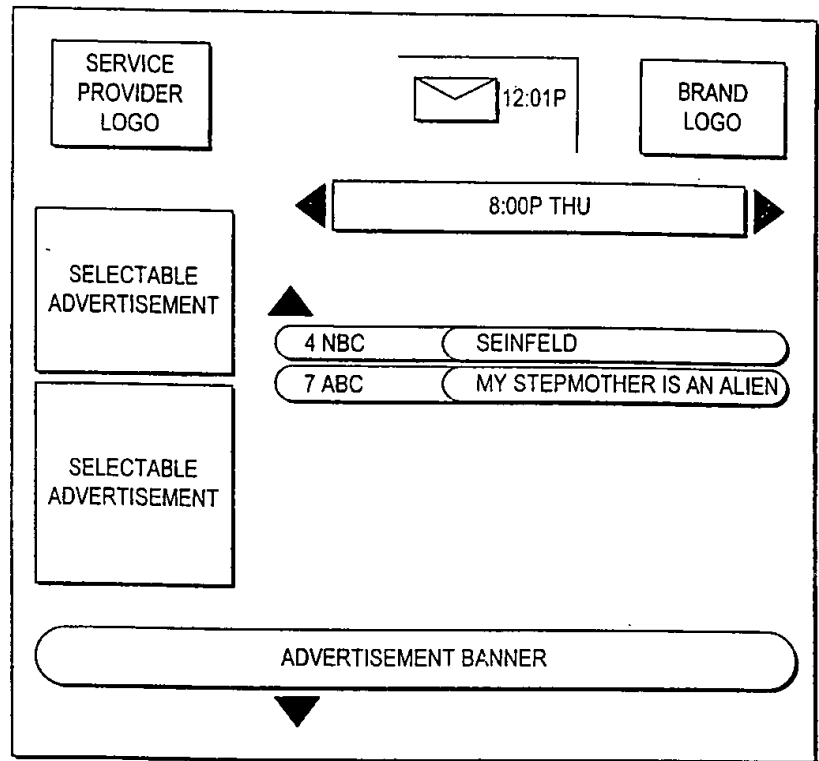


FIG. 16c

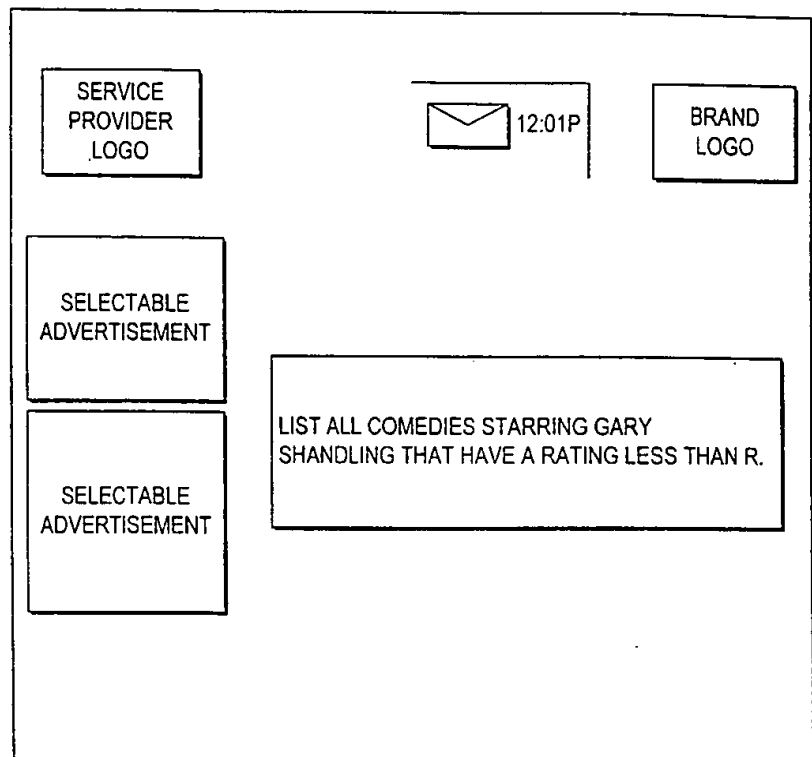
169

FIG. 17b

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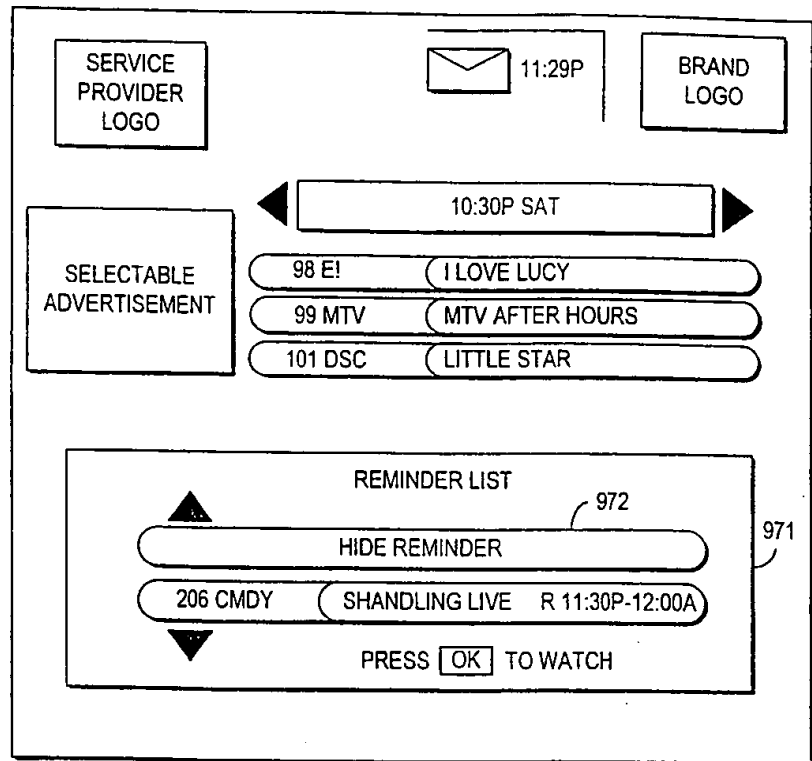


FIG. 19

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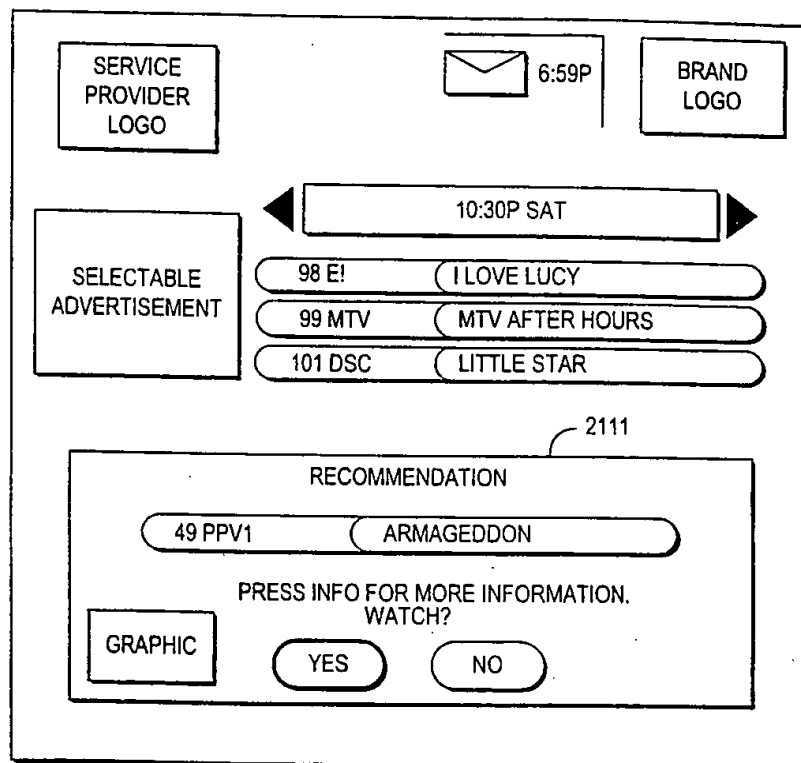


FIG. 20b

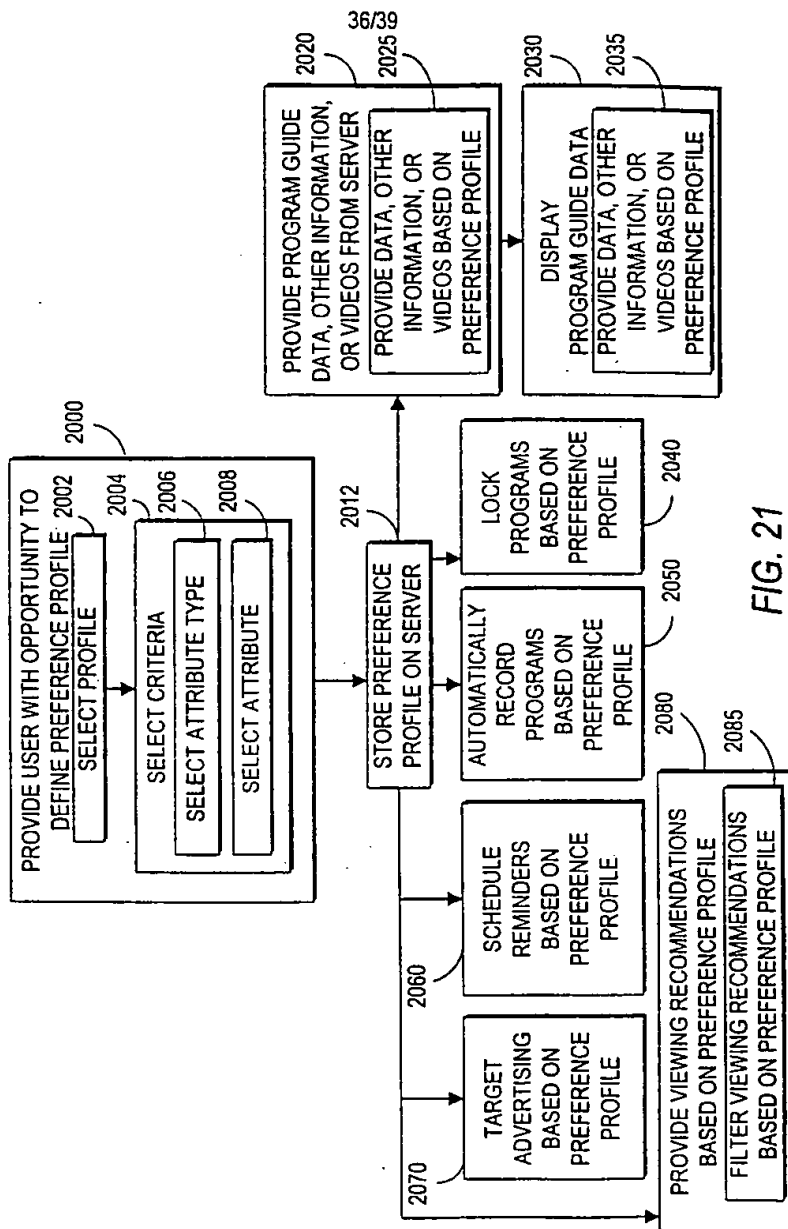


FIG. 21

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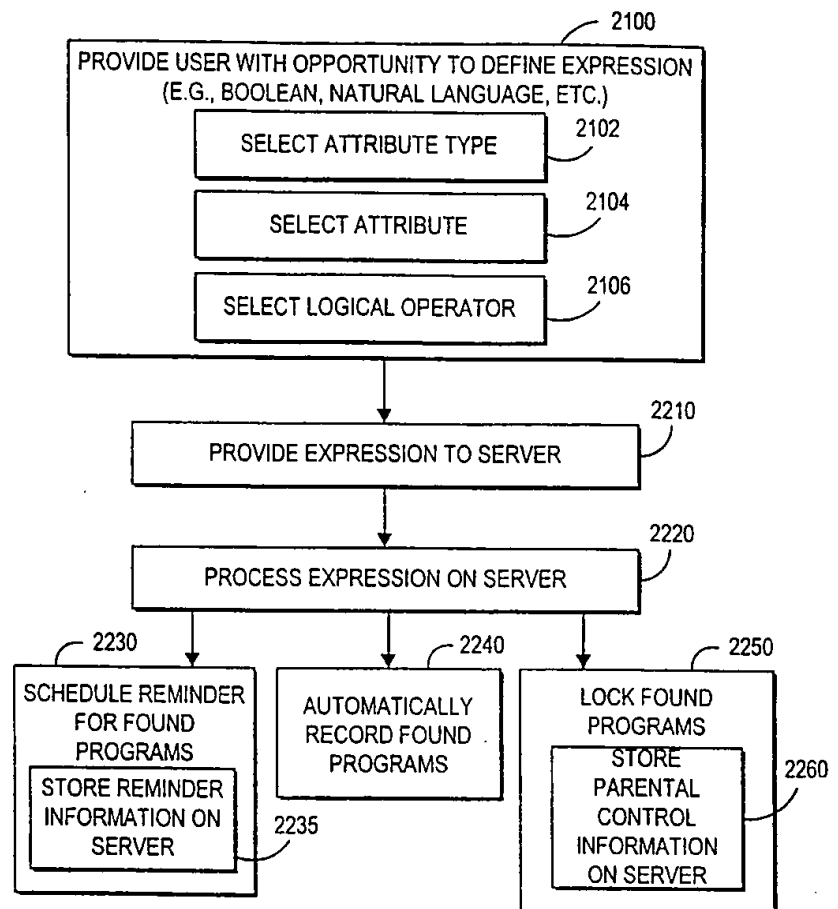


FIG. 23

INTERNATIONAL SEARCH REPORT

 International Application No.
 PCT/US 99/19051

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 H04N7/16		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 H04N		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 94 14284 A (DISCOVERY COMMUNICAT INC) 23 June 1994 (1994-06-23) page 11, line 16 -page 13, line 30 page 15, line 22 -page 18, line 12 page 19, line 21 -page 21, line 10 page 32, line 11 -page 38, line 12 page 45, line 1 -page 46, line 3 page 59, line 11 -page 61, line 14 page 67, line 18 -page 70, line 32 figures 1-14 --- -/--	1-4, 6-11, 14-23, 25-30, 33-42, 44-49, 52-56
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "Z" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
18 November 1999		24/11/1999
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2200 MV Rijswijk Tel. (+31-70) 340-2040, Tx 31 651 epo nl, Fax: (+31-70) 340-3018		Authorized officer
		Van der Zaal, R

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/19051

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9641478 A		PL 323914 A	27-04-1998
WO 9817064 A	23-04-1998	AU 4823197 A	11-05-1998
		EP 0932979 A	04-08-1999

Form PCT/ISA/210 (patent family annex) (July 1992)